Collaborating on Commissioning

The Problem

The practices of commissioning new buildings and retrocommissioning existing facilities offer the potential to significantly reduce energy use and improve the building environment. However, commissioning is not widely practiced because building owners have had no sources that explain the benefits of commissioning in their financial language, and commissioning professionals have lacked a standardized set of references and resources.

The Solution

The California Commissioning Collaborative (CCC) is a nonprofit organization committed to improving the performance of buildings and their systems. Funding from the Public Interest Energy Research program helped transition the CCC from an ad hoc group to a formal organization made up of government, utility, and building service organizations and professionals. The CCC develops cost-effective programs, tools, and techniques and provides a service delivery infrastructure to encourage the use of the building commissioning process in new and existing buildings.

Features/Benefits

The CCC conducts public meetings four to five times per year and maintains a Web site with a variety of resources, including those listed here.

Commissioning case studies. More than 40 case studies show the benefits of commissioning in a variety of environments, including schools and universities, municipal buildings, museums, and hospitals. Most of the buildings covered are in California and the state of Washington, but other states are featured as well, including New York, Colorado, Oregon, and Montana. Each study summarizes costs, benefits, and measures taken and provides contact information if more details are needed (**Figure 1**).

Library. A searchable online library features nearly 300 resources—and most can be downloaded at no cost. Documents include commissioning guides and sample commissioning documentation. Topics covered include equipment and controls, persistence of benefits, data collection and analysis tools, fault detection and diagnostic tools, costs and benefits, case studies, and commissioning for LEED (Leadership in Energy & Environmental Design) buildings.

Cx Assistant. The CCC Web site includes a link to Cx Assistant, a tool maintained on the Energy Design Resources (EDR) Web site. Cx Assistant is a Web-based tool designed to provide project-specific building commissioning information to design teams. The tool enables users to estimate commissioning costs, identify an appropriate commissioning

Figure 1: Case studies on commissioning

Commissioning at the 170,000-square-foot Oregon Department of Administrative Services' Public Service Building saved nearly $10,000 in energy costs. The process identified and corrected a number of problems, including faulty boiler controls, suboptimal economizer operation, and malfunctioning daylight-dimming controls. Details are available at www.cacx.org.

What Is Commissioning?

- *Building commissioning* is the process of ensuring that systems are designed, installed, functionally tested, and capable of being operated and maintained according to the owner's operational needs.
- *Commissioning* is performed in new construction projects and in major capital improvements or retrofits.
- *Retrocommissioning* is the same systematic process applied to existing buildings to ensure that their systems can be operated and maintained according to the owner's needs.

scope, and access sample commissioning specifications related to their construction projects. The EDR Web site, funded by California utility customers, offers a set of resources to help make commercial and industrial buildings more efficient.

How to select a provider. A section of the CCC site helps building owners select a commissioning provider by offering the following:

- An overview of the selection process, including a list of important questions to ask and a list of suggested deliverables.
- A list of suggested qualifications for both new and existing building projects.
- A description of five different commissioning-provider certification programs and a matrix that provides a side-by-side comparison of their requirements.
- A collection of sample commissioning and retrocommissioning documents and templates (see **Table 1**).
- A list of providers doing business in California, including samples of their work.

Newsletter. The CCC provides a quarterly newsletter with announcements about new commissioning resources, training and events, projects, and research.

Applications

The CCC Web site and resources are applicable to buildings of all types and for both new construction and existing buildings.

California Codes and Standards

The State of California's 2005 Building Energy Efficiency Standards require at least 12 acceptance tests for mechanical and electrical equipment ranging from packaged rooftop units to occupancy sensors. The standards took effect October 1, 2005, and awareness of the changes and proper training are essential to ensure that they have the desired effect in the field. To help with this transition, the California Energy Commission, through the CCC, is educating building departments, test providers, and designers to ensure that they are prepared to implement the revised standards.

Table 1: Types of documents and templates available on the CCC Web site

The California Commissioning Collaborative's (CCC's) Web site offers samples of different types of commissioning documents and templates, as listed below.

Scope of work
Commissioning plan
Design intent
Issues log
Final report
Systems manual
RFQ and RFP

Notes: RFQ = request for quotation; RFP = request for proposal.

What's Next?

The CCC is taking a number of steps to increase its resources, including these:

- Writing two commissioning guidelines for commercial buildings—one for new-construction commissioning and one for retrocommissioning.
- Developing more-sophisticated analytical and communication tools to provide information on the costs and benefits of commissioning, in a format that building owners will find most useful, and developing improved methods for verifying savings.
- Developing strategies for training the base of qualified commissioning providers to support the substantial increase in commissioning activity expected in the near future.

For More Information

The resources of the CCC are available online at www.cacx.org.

Contacts

California Commissioning Collaborative, info@cacx.org, 503-595-4432

California Energy Commission, Martha Brook, mbrook@energy.state.ca.us, 916-654-4086, or visit www.energy.ca.gov/pier/buildings

About PIER

This project was conducted by the California Energy Commission's Public Interest Energy Research (PIER) program. PIER supports public-interest energy research and development that helps improve the quality of life in California by bringing environmentally safe, affordable, and reliable energy services and products to the marketplace.

Arnold Schwarzenegger, *Governor*

For more information see www.energy.ca.gov/pier

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